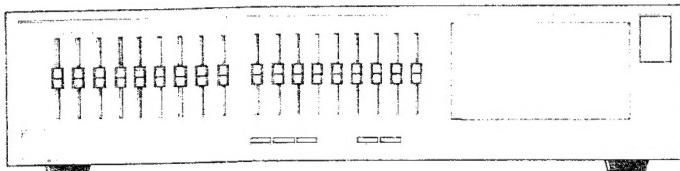


SERVICE MANUAL



EQ470R Graphic Equalizer

Sherwood

Specification

Equalizer Section

Equalizer Range

(Individual channel
adjust) ± 12dB
63Hz, 125Hz, 250Hz, 500Hz,
1KHz, 2KHz, 4KHz, 8KHz, 16KHz

Total Harmonic Distortion

20Hz—20KHz, All Control;
Flat, Output: 1V 0.025%
1KHz, All Control;
Max., Output: 3V 0.06%
1KHz, All Control;
Flat, Output: 2V 0.005%
1KHz, All Control;
Min., Output: 0.2V 0.1%
Insertion Loss 0dB(Control;Flat)

Max. Output Voltage

(1KHz, THD: 0.5%,
RL47KΩ) 10V

Frequency Response 10Hz—50KHz + 0—3dB

Signal to Noise Ratio

(IHF, A Network, short
circuited, 1V. Output) 95dB

Input Impedance 50KΩ

Output Impedance 600Ω

Miscellaneous

Power Consumption 12W
Dimensions 440(W) × 95(H) × 200(D)mm
Weight(without package) 3.3kg ()
Furnished Parts
Connection Cord with Pin
Plugs 2
Operating Instructions 1

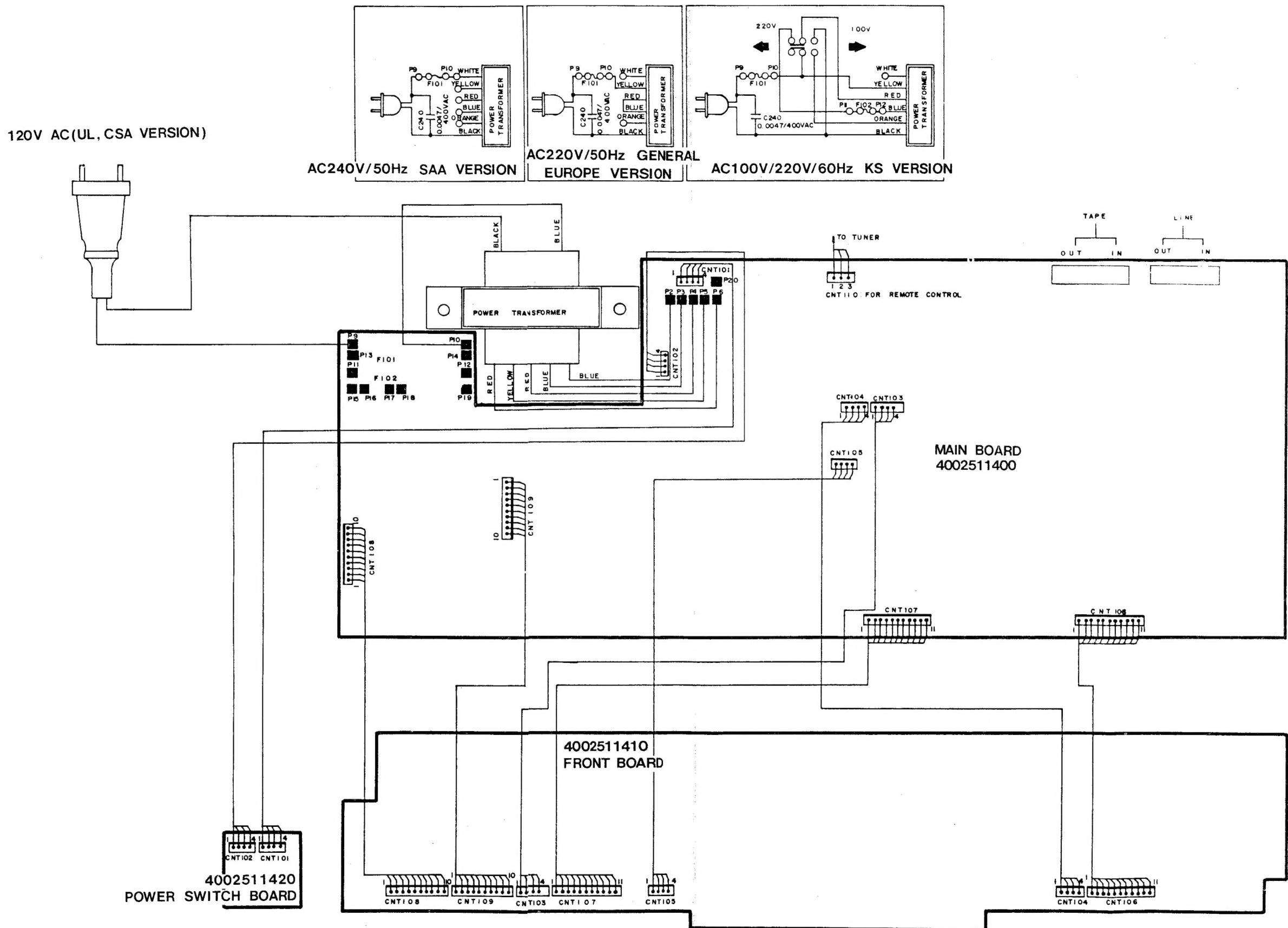
NOTE:

Specification and the design subject to possible modification without notice due to improvements.

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Point to Point Wiring Diagram

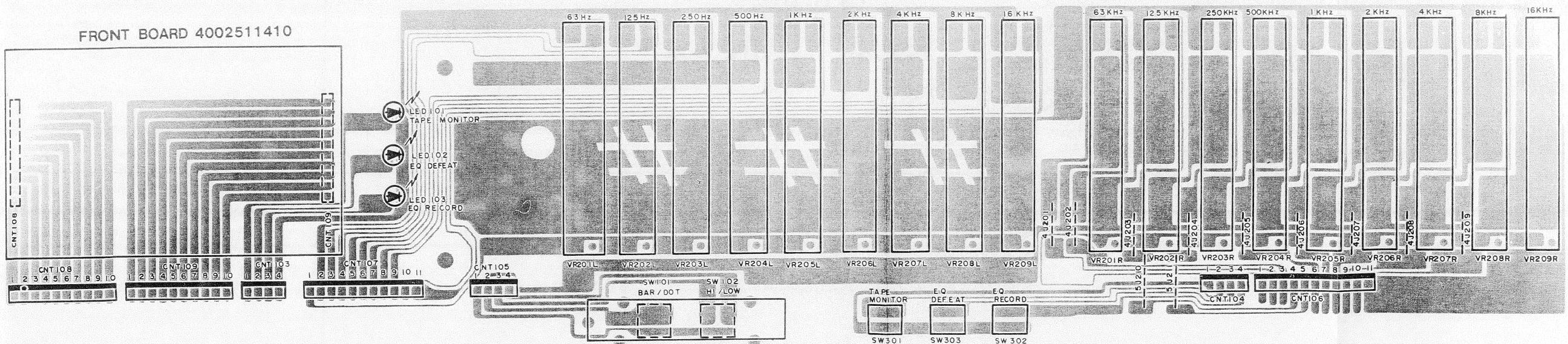
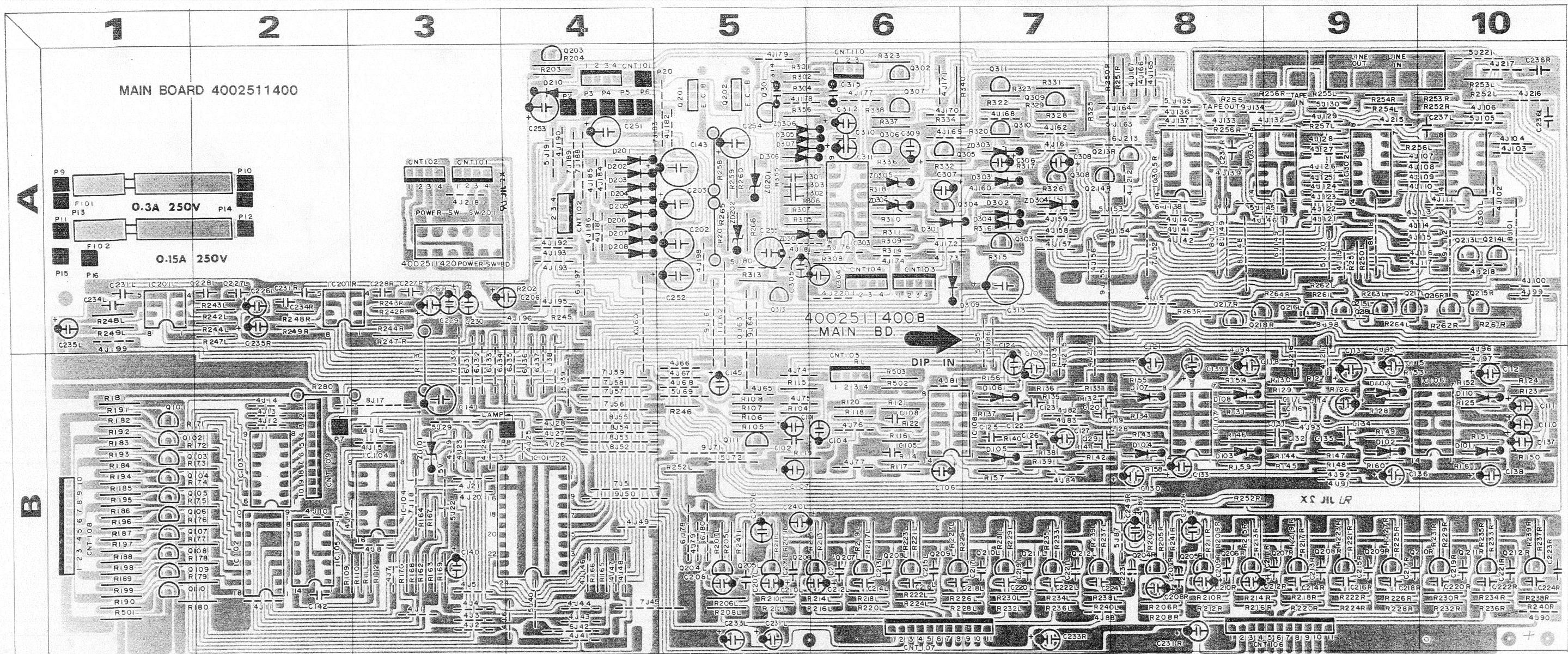


Parts List & Top View of P.C Boards

MAIN BOARD 4002511400

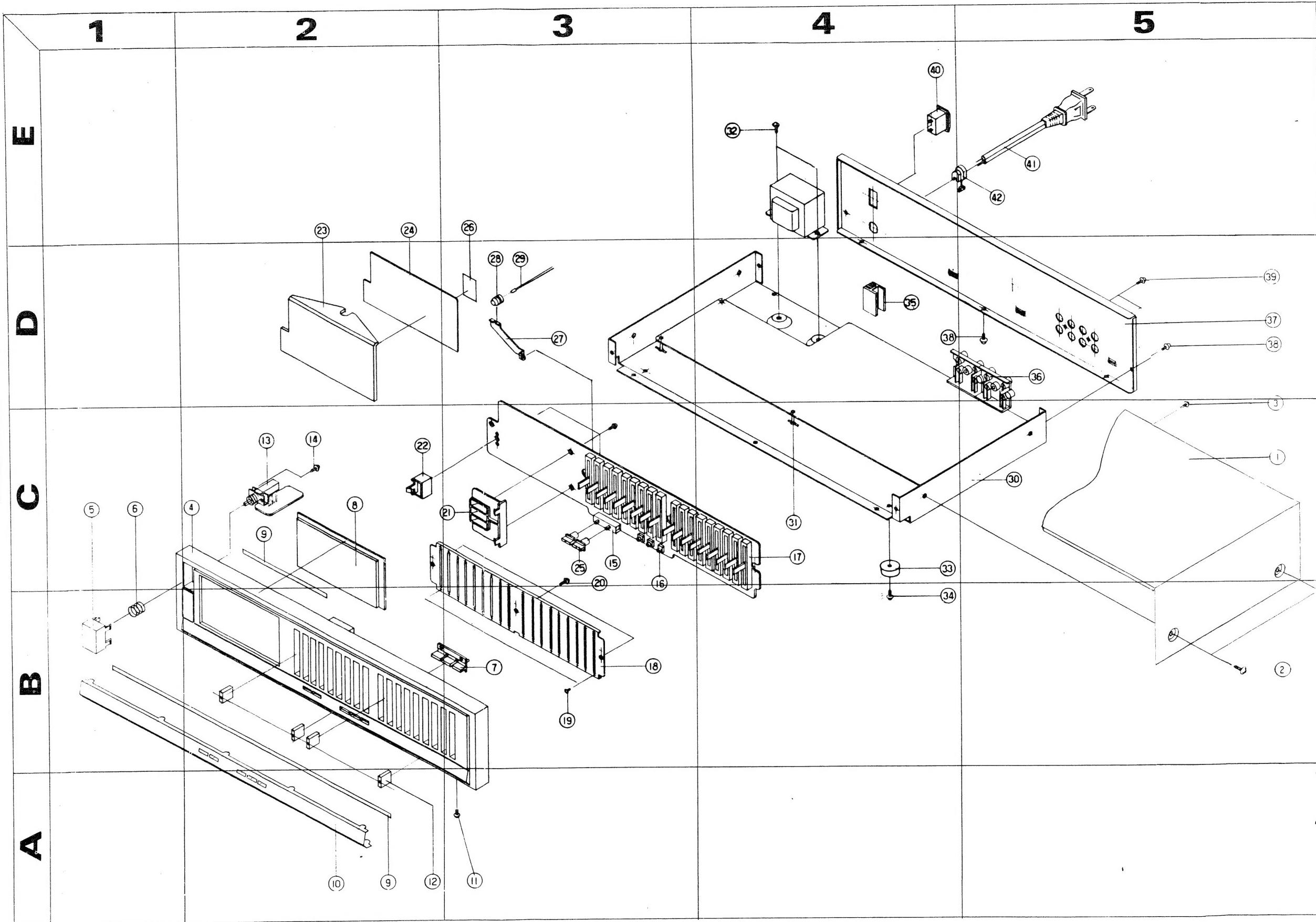
| Ref.No. | Parts No. | Description | Position |
|--------------------|------------|--------------------------------------|----------|
| ●IC | | | |
| IC101 | 2138009111 | MC14067 BCP. | 4B |
| IC102 | 2168024102 | LM3915 | 2B |
| IC103 | 2108009112 | 74145 | 2B |
| IC104 | 2138009110 | MC14029 | 3B |
| IC105 | 2138009109 | MC14016 | 2B |
| IC106 | 2168000113 | LM324 | 10B |
| IC107 | | | 8B |
| IC108 | | | 6.7B |
| IC301L/R | 2138017108 | LC4966 | 10A/9A |
| IC302L/R | | | 9A/8A |
| IC303 | 2168007123 | TC9130P | 6A |
| IC201L/R | 2168220103 | NJM4560D | 1A/2.3A |
| ●TRANSISTOR | | | |
| Q101,Q102 | 2208206105 | KTA1015 | 1B |
| Q103,Q104 | | | |
| Q105,Q106 | | | |
| Q107,Q108 | | | |
| Q109,Q110 | | | |
| Q201 | 2028406113 | D880 | 5A |
| Q202 | 2028106111 | B834 | 5A |
| Q203 | 2208206105 | KTA1015 | 4A |
| Q204L/R | 2208606109 | KTC1815Y | 5B/8B |
| Q205L/R | | | 5B/8B |
| Q206L/R | | | 6B/8.9B |
| Q207L/R | | | 6B/9B |
| Q208L/R | | | 6B/9B |
| Q209L/R | | | 7B/9B |
| Q210L/R | | | 7B/10B |
| Q211L/R | | | 7B/10B |
| Q212L/R | | | 7.8B/10B |
| Q213L/R | | | 10A/8A |
| Q214L/R | | | 10A/8A |
| Q215L/R | | | 9A/10A |
| Q216L/R | | | 9A/10A |
| Q217L/R | | | 10A/8A |
| Q218L/R | | | 9A/9A |
| Q301 | | | 5A |
| Q302 | | | 6A |
| Q303 | | | 7A |
| Q304,Q305 | | | 6.7A |
| Q306,Q307 | | | 6A |
| Q308,Q309 | | | 7A |
| Q310,Q311 | | | 7A |
| Q313 | | | 5A |
| ●RESISTOR | | | |
| R103 | 3069101270 | Carbon Film 100 ohm $\frac{1}{4}$ W | 7A,B |
| R104 | 3069102270 | Carbon Film 1K ohm $\frac{1}{4}$ W | 5.6B |
| R105 | 3069104270 | Carbon Film 100K ohm $\frac{1}{4}$ W | 5B |
| R106 | 3069101270 | Carbon Film 100K ohm $\frac{1}{4}$ W | 5B |
| R107 | 3069103270 | Carbon Film 10K ohm $\frac{1}{4}$ W | 5B |
| R108 | 3069102270 | Carbon Film 1K ohm $\frac{1}{4}$ W | 5B |
| R109 | 3069394270 | Carbon Film 390K ohm $\frac{1}{4}$ W | 3B |
| R110 | 3069134270 | Carbon Film 130K ohm $\frac{1}{4}$ W | 3B |
| R111,R112 | 3069203270 | Carbon Film 20K ohm $\frac{1}{4}$ W | 3B |
| R113 | 3039100472 | Metal Oxide 10(1W) | 3A,B |
| R114,R115 | 3069102270 | Carbon Film 1K ohm $\frac{1}{4}$ W | 5.6B |
| R116 | 3069104270 | Carbon Film 100K ohm $\frac{1}{4}$ | 6B |
| R117 | 3069302270 | Carbon Film 3K ohm $\frac{1}{4}$ W | 6B |
| R118 | 3069223270 | Carbon Film 22K ohm $\frac{1}{4}$ W | 6B |
| R119 | 3069302270 | Carbon Film 3K ohm $\frac{1}{4}$ W | 5.6B |
| R120 | 3069223270 | Carbon Film 22K ohm $\frac{1}{4}$ W | 6B |
| R121 | 3069473270 | Carbon Film 47K ohm $\frac{1}{4}$ W | 6B |
| R122 | 3069102270 | Carbon Film 1K ohm $\frac{1}{4}$ W | 6B |
| R123 | 3069203270 | Carbon Film 20K ohm $\frac{1}{4}$ W | 10B |
| R124 | 3069911270 | Carbon Film 910K ohm $\frac{1}{4}$ W | 10B |
| R125 | 3069683270 | Carbon Film 68K ohm $\frac{1}{4}$ W | 10B |
| R126 | 3069203270 | Carbon Film 20K ohm $\frac{1}{4}$ W | 9B |
| R127 | 3069132270 | Carbon Film 1.3K ohm $\frac{1}{4}$ W | 9B |
| R128 | 3069623270 | Carbon Film 62K ohm $\frac{1}{4}$ W | 9B |
| R129 | 3069203270 | Carbon Film 20K ohm $\frac{1}{4}$ W | 9B |
| R130 | 3069122270 | Carbon Film 1.2K ohm $\frac{1}{4}$ W | 9B |
| R131 | 3069513270 | Carbon Film 51K ohm $\frac{1}{4}$ W | 8B |
| R132 | 3069183270 | Carbon Film 18K ohm $\frac{1}{4}$ W | 7.8B |
| R133 | 3069911270 | Carbon Film 910K ohm $\frac{1}{4}$ W | 7.8B |
| R134 | 3069473270 | Carbon Film 47K ohm $\frac{1}{4}$ W | 8B |
| R135 | 3069183270 | Carbon Film 18K ohm $\frac{1}{4}$ W | 7B |

| Ref.No. | Parts No. | Description | Position |
|------------|------------|--------------------------------------|----------|
| ●IC | | | |
| R136 | 3069102270 | Carbon Film 1K ohm $\frac{1}{4}$ W | 7B |
| R137 | 3069513270 | Carbon Film 51K ohm $\frac{1}{4}$ W | 7B |
| R138 | 3069203270 | Carbon Film 20K ohm $\frac{1}{4}$ W | 7B |
| R139 | 3069112270 | Carbon Film 1.1K ohm $\frac{1}{4}$ W | 7B |
| R140 | 3069563270 | Carbon Film 56K ohm $\frac{1}{4}$ W | 7B |
| R141 | 3069243270 | Carbon Film 24K ohm $\frac{1}{4}$ W | 7.8B |
| R142 | 3069132270 | Carbon Film 1.3K ohm $\frac{1}{4}$ W | 7.8B |
| R143 | 3069623270 | Carbon Film 62K ohm $\frac{1}{4}$ W | 8B |
| R144 | 3069203270 | Carbon Film 20K ohm $\frac{1}{4}$ W | 9B |
| R145 | 3069122270 | Carbon Film 1.2K ohm $\frac{1}{4}$ W | 9B |
| R146 | 3069683270 | Carbon Film 68K ohm $\frac{1}{4}$ W | 8B |
| R147 | 3069273270 | Carbon Film 27K ohm $\frac{1}{4}$ W | 9B |
| R148 | 3069132270 | Carbon Film 1.3K ohm $\frac{1}{4}$ W | 9B |
| R149 | 3069513270 | Carbon Film 51K ohm $\frac{1}{4}$ W | 9B |
| R150 | 3069104270 | Carbon Film 100K ohm $\frac{1}{4}$ W | 10B |
| R151 | 3069563270 | Carbon Film 56K ohm $\frac{1}{4}$ W | 10B |
| R152 | 3069222270 | Carbon Film 2.2K ohm $\frac{1}{4}$ W | 10B |
| R153 | | | 9B |
| R154,R155 | | | 8B |
| R156,R157 | | | 7B |
| R158,R159 | | | 8B |
| R160 | | | 9B |
| R161 | | | 10B |
| R162 | 3069471270 | Carbon Film 470K ohm $\frac{1}{4}$ W | 3B |
| R163 | 3069103270 | Carbon Film 10K ohm $\frac{1}{4}$ W | 3B |
| R164 | 3069331270 | Carbon Film 330K ohm $\frac{1}{4}$ W | 3B |
| R165 | 3069473270 | Carbon Film 47K ohm $\frac{1}{4}$ W | 4B |
| R166 | 3069224270 | Carbon Film 220K ohm $\frac{1}{4}$ W | 4B |
| R167 | 3069560270 | Carbon Film 56K ohm $\frac{1}{4}$ W | 3B |
| R168 | 3069161270 | Carbon Film 160K ohm $\frac{1}{4}$ W | 3B |
| R169 | 3069751270 | Carbon Film 750K ohm $\frac{1}{4}$ W | 3B |
| R170 | 3069331270 | Carbon Film 330K ohm $\frac{1}{4}$ W | 3B |
| R171,R172 | 3069102270 | Carbon Film 1K ohm $\frac{1}{4}$ W | 1.2B |
| R173,R174 | | | |
| R175,R176 | | | |
| R177,R178 | | | |
| R179,R180 | | | |
| R181,R182 | | | |
| R183,R184 | | | |
| R185,R186 | | | |
| R187,R188 | | | |
| R189,R190 | | | |
| R191,R192 | 3069561270 | Carbon Film 560K ohm $\frac{1}{4}$ W | 1B |
| R193,R194 | | | |
| R195,R196 | | | |
| R197,R198 | | | |
| R199,R501 | | | |
| R502,R503 | 3069122270 | Carbon Film 1.2K ohm $\frac{1}{4}$ W | 6B |
| R201 | 3039100472 | Metal Oxide 10 ohm1W | 5A |
| R202 | 3069100270 | Carbon Film 10 ohm $\frac{1}{4}$ W | 4A |
| R203 | 3069223270 | Carbon Film 22K ohm $\frac{1}{4}$ W | 4A |
| R204 | 3069103270 | Carbon Film 10K ohm $\frac{1}{4}$ W | 4A |
| R205L/R | 3069104270 | Carbon Film 100K ohm $\frac{1}{4}$ W | 5B/8B |
| R206L/R | 3069122270 | Carbon Film 1.2K ohm $\frac{1}{4}$ W | 5B/8B |
| R207L/R | 3069391270 | Carbon Film 390 ohm $\frac{1}{4}$ W | 5B/8B |
| R208L/R | 3069153270 | Carbon Film 15K ohm $\frac{1}{4}$ W | 5B/8B |
| R209L/R | 3069104270 | Carbon Film 100K ohm $\frac{1}{4}$ W | 5B/8B |
| R210L/R | 3069102270 | Carbon Film 1K ohm $\frac{1}{4}$ W | 5B/8B |
| R211L/R | 3069391270 | Carbon Film 130K ohm $\frac{1}{4}$ W | 3B |
| R212L/R | 3069391270 | Carbon Film 390 ohm $\frac{1}{4}$ W | 5B/8B |
| R213L/R | 3069104270 | Carbon Film 100K ohm $\frac{1}{4}$ W | 6B/9B |
| R214L/R | 3069102270 | Carbon Film 1K ohm $\frac{1}{4}$ W | 6B/8.9B |
| R215L/R | 3069391270 | Carbon Film 390 ohm $\frac{1}{4}$ W | 6B/8B |
| R216L/R | 3069153270 | Carbon Film 15K ohm $\frac{1}{4}$ W | 6B/8.9B |
| R217L/R | 3069104270 | Carbon Film 100K ohm $\frac{1}{4}$ W | 6B/9B |
| R218L/R | 3069122270 | Carbon Film 1.2K ohm $\frac{1}{4}$ W | 6B/9B |
| R219L/R | 3069391270 | Carbon Film 390 ohm $\frac{1}{4}$ W | 6B/9B |
| R220L/R | 3069153270 | Carbon Film 15K ohm $\frac{1}{$ | |



Parts List & Exploded View of Cabinet & Chassis

| NO. | PARTS NO. | DESCRIPTION | Q'TY | POSITION |
|-----|--------------|--------------------|------|----------|
| 1 | 046122011711 | COVER TOP | 1 | C6 |
| 2 | 8159440083 | SCREW WPS4-8(B) | 4 | B6 |
| 3 | 8119430053 | SCREW PS3×5(B) | 1 | D6 |
| 4 | 048501005711 | PANNEL FRONT | 1 | C2 |
| 5 | 048545026611 | BUTTON PUSH(POWER) | 1 | C1 |
| 6 | 6555601020 | SPRING COIL | 1 | C1 |
| 7 | 8545033810 | BUTTON TACT | 1 | B3 |
| 8 | 8555013010 | WINDOW L.E.D | 1 | C2 |
| 9 | 1858400103 | TAPE DOUBLE W-5 | 1 | C2, A2 |
| 10 | 048633001111 | PLATE NAME | 1 | A2 |
| 11 | 8119430053 | SCREW PS3×5(B) | 3 | A3 |
| 12 | 048545032011 | KNOB SLIDE | 18 | A2 |
| 13 | 4628043610 | S/W PUSH(POWER) | 1 | C2 |
| 14 | 8119130081 | SCREW #1PT 3×8(Y) | 2 | C2 |
| 15 | 4628040410 | S/W PUSH (2KEY) | 1 | C3 |
| 16 | 4658001120 | S/W TACT | 3 | C3 |
| 17 | 3238406410 | SLVR 4518 PB | 18 | C4 |
| 18 | 6503008310 | B.K TE Q | 1 | B3 |
| 19 | 3019120033 | SCREW PM2×3(B) | 20 | B3 |
| 20 | 8119130081 | SCREW #1RT 3×8(Y) | 6 | C3 |
| 21 | 8523007710 | DECORATION L.E.D | 1 | C3 |
| 22 | 6515008810 | HOLDER REFLECTOR | 1 | C2 |
| 23 | 048555012811 | REFLECTOR L.E.D | 1 | E2 |
| 24 | 048535010011 | INLAY DECORATIO | 1 | E2 |
| 25 | 8545033910 | BUTTON PUSH | 2 | C3 |
| 26 | 8535011110 | DIFFUSER | 1 | E3 |
| 27 | 6515008910 | HOLDER LAMP | 1 | A3 |
| 28 | 6715010410 | LAMP HOLDER | 1 | D3 |
| 29 | 2528201420 | LAMP | 1 | D3 |
| 30 | 6122612410 | CHASSIS MAIN | 1 | C5 |
| 31 | 6528300310 | FASTNER | 4 | C4 |
| 32 | 8159440081 | SCREW WPS 4-8(Y) | 2 | E4 |
| 33 | 6335000310 | FOOT | 4 | C4 |
| 34 | 8119430081 | SCREW WPS 3-8(Y) | 4 | B4 |
| 35 | 7505201920 | HEAT SINM REG TR | 1 | D4 |
| 36 | 4438100410 | JACK R.C.A | 1 | D5 |
| 37 | 046102018112 | CHASSIS BACK | 1 | D6 |
| 38 | 8119430053 | SCREW PS 3×5(B) | 5 | D5, D6 |
| 39 | 8119130083 | SCREW #1PT 3×8(B) | 2 | D6 |
| 40 | 4308000220 | CORD AC POWER | 1 | E5 |
| 41 | 6518000111 | STOPPER CORD | 1 | E5 |



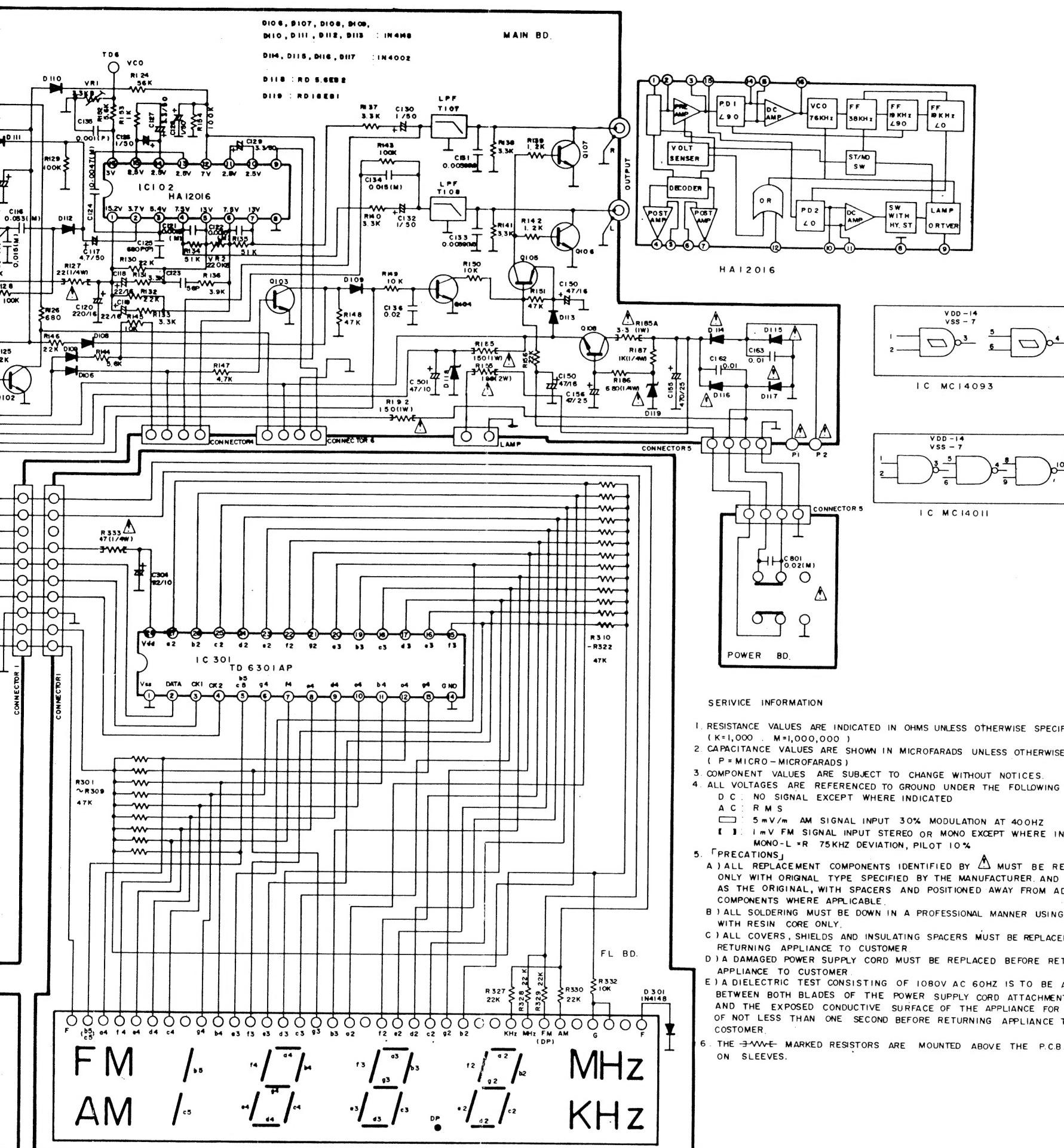
D

E

F

G

Schematic Diagram
TD140



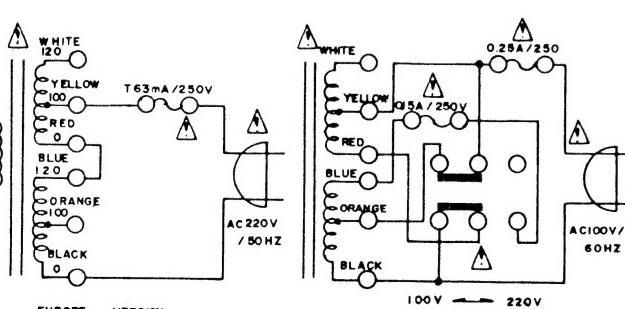
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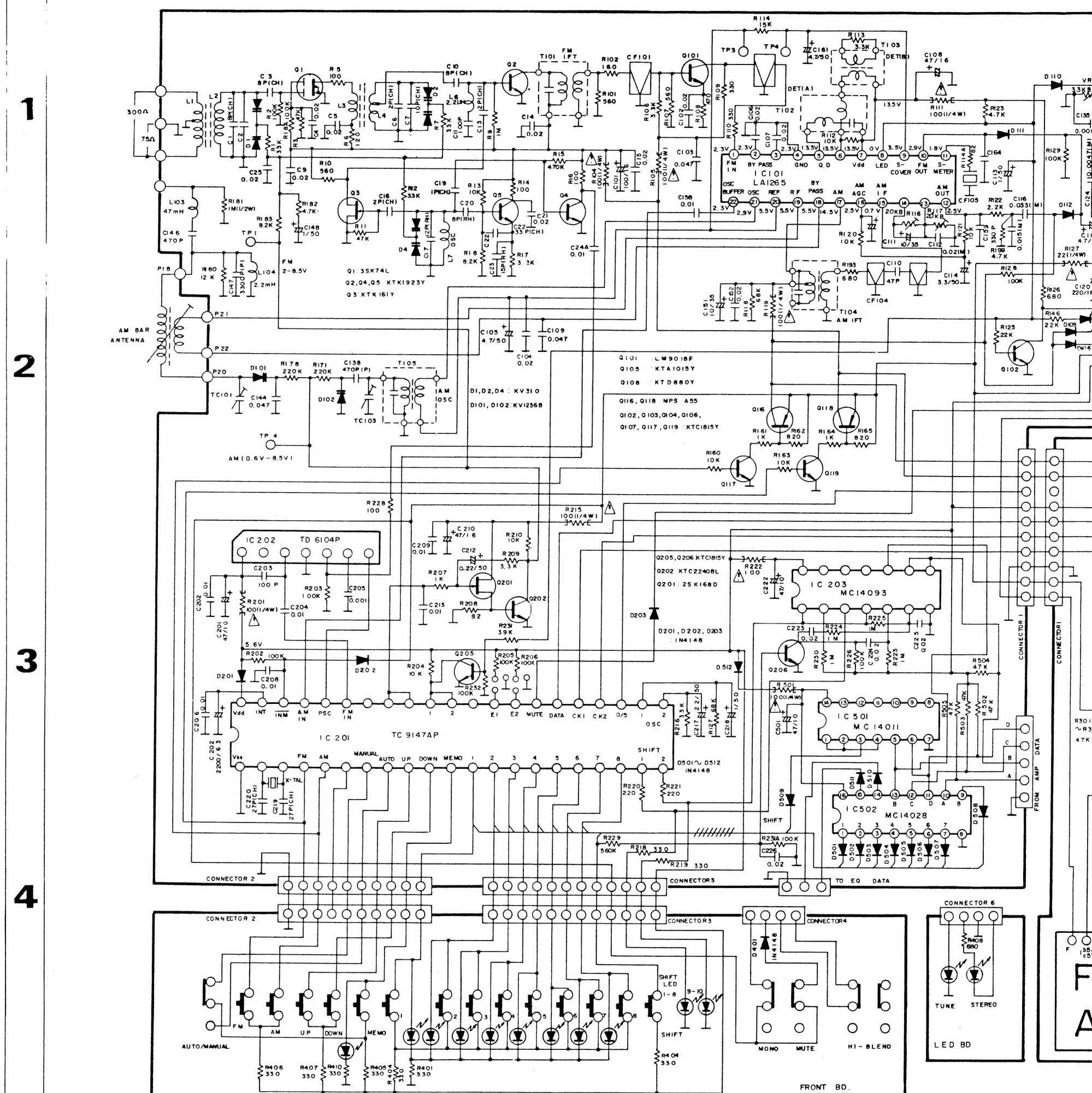
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Schematic

TD14



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YELLOW

A

B

C

D

D

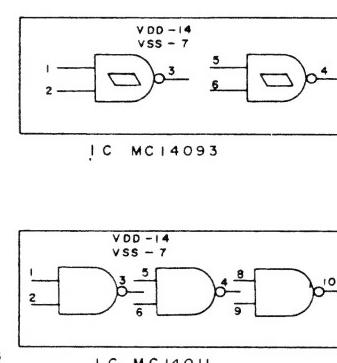
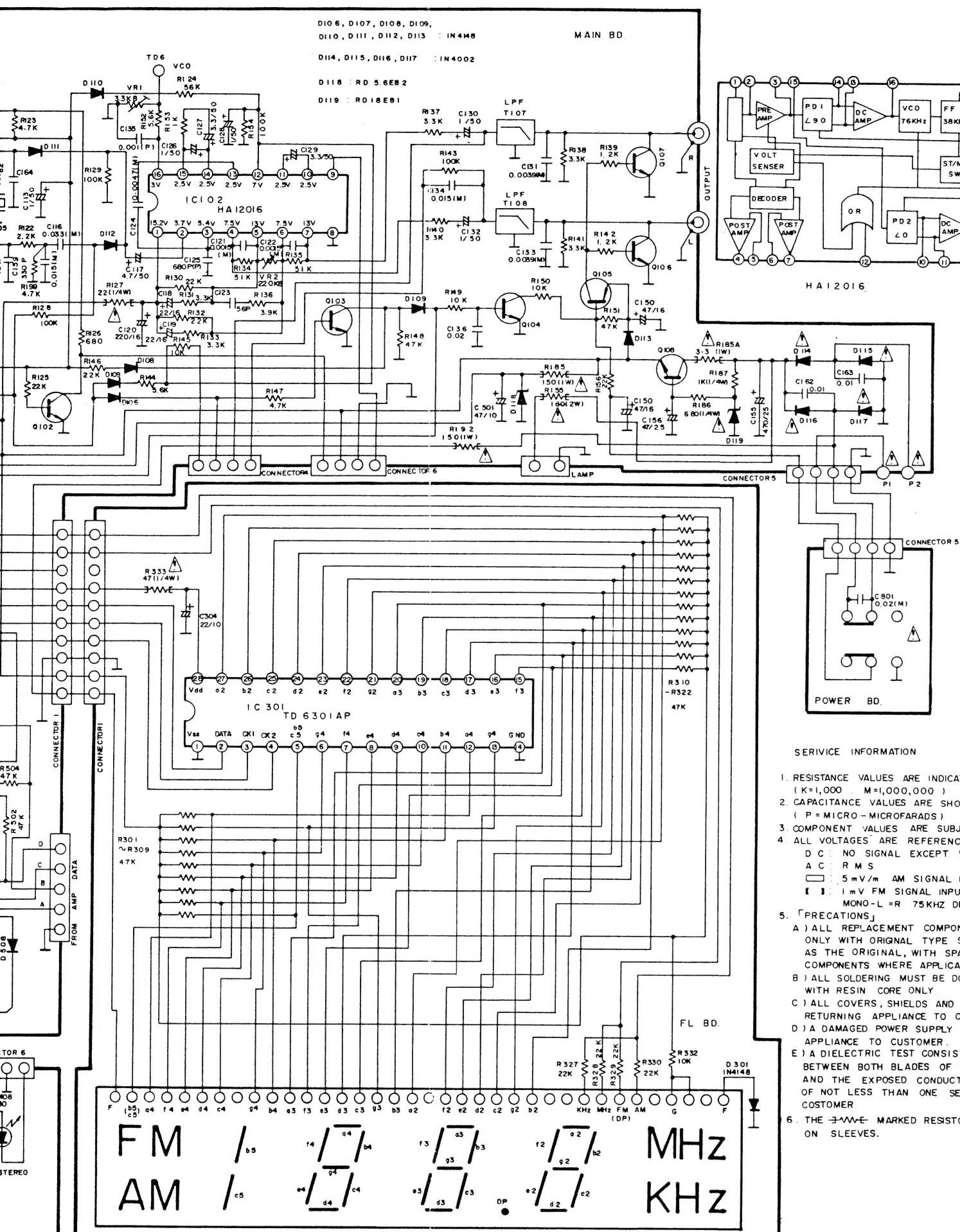
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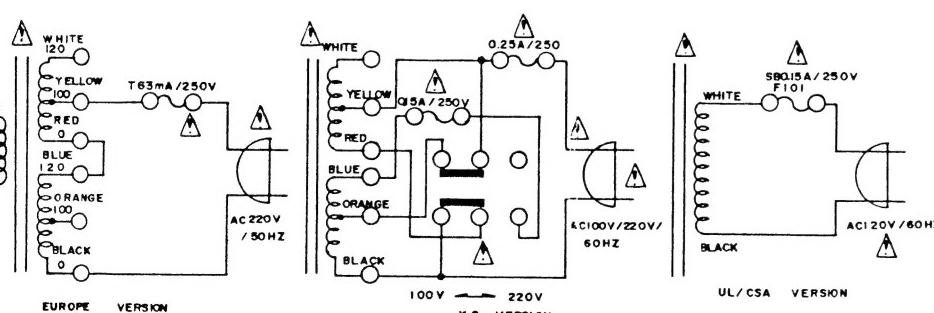
hematic Diagram

TD140R



SERVICE INFORMATION

- RESISTANCE VALUES ARE INDICATED IN OHMS UNLESS OTHERWISE SPECIFIED
(K=1,000 M=1,000,000)
 - CAPACITANCE VALUES ARE SHOWN IN MICROFARADS UNLESS OTHERWISE NOTED.
(P = MICRO - MICROFARADS)
 - COMPONENT VALUES ARE SUBJECT TO CHANGE WITHOUT NOTICES.
 - ALL VOLTAGES ARE REFERENCED TO GROUND UNDER THE FOLLOWING CONDITIONS:
D C : NO SIGNAL EXCEPT WHERE INDICATED
A C : R M S
 5 mV/m AM SIGNAL INPUT 30% MODULATION AT 400HZ
 1 mV FM SIGNAL INPUT STEREO OR MONO EXCEPT WHERE INDICATED
MONO-L = R 75KHZ DEVIATION, PILOT 10%
 - PRECAUTIONS:
 - ALL REPLACEMENT COMPONENTS IDENTIFIED BY  MUST BE REPLACED ONLY WITH ORIGINAL TYPE SPECIFIED BY THE MANUFACTURER AND INSTALLED AS THE ORIGINAL, WITH SPACERS AND POSITIONED AWAY FROM ADJACENT COMPONENTS WHERE APPLICABLE.
 - ALL SOLDERING MUST BE DONE IN A PROFESSIONAL MANNER USING SOLDER WITH RESIN CORE ONLY.
 - ALL COVERS, SHIELDS AND INSULATING SPACERS MUST BE REPLACED BEFORE RETURNING APPLIANCE TO CUSTOMER.
 - DAMAGED POWER SUPPLY CORD MUST BE REPLACED BEFORE RETURNING APPLIANCE TO CUSTOMER.
 - A DIELECTRIC TEST CONSISTING OF 100V AC 60HZ IS TO BE APPLIED BETWEEN BOTH BLADES OF THE POWER SUPPLY CORD ATTACHMENT PLUG AND THE EXPOSED CONDUCTIVE SURFACE OF THE APPLIANCE FOR A PERIOD OF NOT LESS THAN ONE SECOND BEFORE RETURNING APPLIANCE TO CUSTOMER.
 - THE ~~3-MWE~~ MARKED RESISTORS ARE MOUNTED ABOVE THE P.C.B.
ON SLEEVES



D

E

5

C

Block Diagram

